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gether the vehicle he worked carefully, but inevitable accidents occurred. Several times the partially dried wood used for crosspieces split when nailed in place. Hans did not go out of his way to rectify these damages. In other words, he revealed no evidence of a drive toward perfection. He was always aware of the limits of the material which he was using but was not well satisfied with the finished product. About half-way through the construction process, Hans expressed the desire for sufficient skins with which to buy a commercially manufactured toboggan during his Christmas visit to Lower Post.[9]

Toboggans are built by men. When carrying a passenger, this vehicle is guided by handlebars. The construction of these was not observed. Their principal feature is a pair of curved wooden handles secured together with crosspieces and lashed to the toboggan. The handlebars are placed about ten inches from the rear of the vehicle, leaving a small space on which a man can stand. The partially enclosed cariole was never seen in the Kaska area.

From three to six dogs are used to draw a toboggan. Dogs are hitched one behind the other, one dog being consistently employed as a leader. The fanwise type of harness is not used and, indeed, would not be adapted to the wooded brushy country of the area. Dog harness is made by women from one and a half inch canvas webbing and includes a collar made of tanned moosehide stuffed with moose hairs and sewn with babiche. The traces are secured to the collar, while a cinch strap, containing two or three small sleigh bells, is fitted around the dog's back to keep the harness in place. The harness of each dog behind the leader is fitted with steel rings which are attached to inch long steel snap fasteners at the end of the traces. These fasteners are also used to harness the last dog to the lashing of the toboggan.

A man generally packs the toboggan but may be assisted by his wife. The heaviest load is placed in the rear of the vehicle. The goods are set on the floor boards, cooking pots and frying pans being placed on top of the main load. The outfit is then covered with a large canvas tarp which is tied down to the toboggan's lashing with several pieces of manila rope. The rope is first secured to the lashing with an overhand knot. Passing across the top of the load it bends under the lashing on the opposite side of the vehicle and is pulled tight before being drawn back to the first side. This process continues to the end of the cordage which is then tied to the lashing with a single overhand knot. A new piece of cordage is taken and the tying continued. Cut or uncut wood is also lashed down in this fashion. Lunch for people traveling is placed in a packsack, which is tied between the handlebars when this apparatus is in use. When children or women ride on the toboggan, they are seated so that their backs rest against the handlebar cross pieces. Folded blankets are placed on the floor boards, an eiderdown sleeping robe is spread on top of these and is drawn tightly around the person's body so that it covers the head like a hood. This serves to keep off falling snow. The covering is then lashed to the handlebars and to the side lashing. When the traveler temporarily leaves this shelter, the blankets are immediately closed in order to prevent the heated, damp blankets from freezing. After the toboggan is packed, the man's wife or a younger boy harnesses the dogs to the vehicle.

[9] Although Hans' trapping luck was rather poor, the fact that the ethnographer was willing to buy his toboggan enabled him to satisfy his desire. The toboggan, whose manufacture has just been described, is now in the Yale Peabody Museum of Natural History.

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493 481 In traveling with a toboggan after a snowfall it is necessary for someone with snowshoes to precede the dogs and break trail for them as well as to clear windfalls and bulwark the ascents to ridges. Men or women or adolescent children may break trail. If possible, two persons are used to break trail, one following behind the other. The person guiding the toboggan (usually a man) runs behind the vehicle on snowshoes (Pl. 7, B). Such guidance is particularly important when the trail runs downhill, as it is then necessary to restrain the progress of the vehicle. Going uphill assistance must be given to the dogs. This is generally done by the person whose task it is to guide the toboggan running in front with the guide rope and pulling. The rope is not pulled directly in front of the dogs but from a side. On the diagonal ascent of a ridge the guide rope is pulled from the uphill side of the trail in order to prevent the conveyance from slipping. When handlebars are used, dogs are assisted by pushing the toboggan from behind while on a steep hill further help is given by someone else tugging on the dog harness (Pl. 12, A).

A particular danger in traveling across frozen lake and river surfaces is encountered from overflows. These are produced by sinking ice, through which a small amount of water may seep without freezing. Sometimes overflows are impossible to detect in advance, being covered with freshly falling snow. The unfrozen water quickly forms ice on the toboggan boards and, if the unaccustomed friction causes the dogs to halt, may freeze the vehicle to the spot. When a toboggan runs into an overflow and the forming ice begins to hold back the dogs, quick help is given to assist the animals. As soon as the vehicle is on dry snow it is tilted to one side and the ice knocked free with the back of an ax. Remaining ice is scraped free with the ax blade. Sometimes this is not sufficient to remove all the ice. Then the toboggan must be unpacked, a fire made, and the ice melted loose, after which the boards are allowed to dry. Despite the recognized danger of overflows, a suspicious spot of ice is often run over swiftly in order to avoid a lengthy detour. To guard against such danger spots, the person breaking trail often secures a long pole and, well in advance of the vehicle, tests the ice before each step. When not in use the toboggan is turned upside down, on its side, or is leaned against a building with the rear portion resting on the ground. It is rarely placed on a sleigh rack.

493 1177 348 335 The construction of the Yukon sleigh was not observed. Such vehicles, made from birch, are from seven to nine feet long and are far heavier than toboggans. Their construction was probably learned from white men. The basis of the conveyance consists of two runners, which are several inches longer than the floor boards of the body. The runners are three inches wide and one inch thick. After being bent they are fitted with readymade steel runners that are attached with screws. The floor slats of the sleigh are made of birch wood; four pieces of lumber are required, each four inches wide and about a half inch thick. They are held together by crosspieces, five inches wide and half an inch thick. The crosspieces are placed twenty inches apart, their number depending on the length of the vehicle, and are secured to the floor boards by means of carriage bolts. The floor of the sleigh meets the upturned runners in front but along the rest of the vehicle it is supported about four inches above each runner by stanchions, five inches long, four inches wide, and three inches thick. These blocks are spaced about ten inches apart beginning about four inches from the rear of the sleigh. The body and runners are joined to the stanchions by means of screws. Sleighs are usually provided with handlebars, which are about eighteen inches high and

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much longer than those found on toboggans. Instead of fitting on the rear of the conveyance, the handlebars of a sleigh extend about halfway to the front of the vehicle where they are screwed in place. A lashing of babiche runs along each side of the sleigh body and is used for tying down the load. Shafts are employed with the dog harness. These are cut from green spruce poles, about six feet long and three inches in their greatest diameter. They are attached to the sleigh by means of babiche. The line passes through a pair of holes drilled in the most forward stanchion on each side of the sleigh and through corresponding holes drilled at the lower end of each shaft.

Sleighs are packed the same way as toboggans and their management follows similar principles. When not in use they stand on one side or else are stored on sleigh racks. When left standing with the runners in the snow, ice forms which must be knocked off before the vehicle can be used.

Toy sleds, about three or four feet long, are played with by children around the winter settlements.

Foot travel is the commonest form of overland summer travel, although some Nelson Indian children and women ride horses when long distances must be covered. In winter, children from five or six years of age generally walk, while younger children are packed on the mother's back or else ride in sleighs and toboggans. No particular type of foot-gear is regarded as most suitable for land travel in summer, although moccasins are preferred for hunting. In winter moccasins are always worn and, under these, snowshoes.

Snowshoes have several functions. By relieving the strain of plodding through deep snow and the problem of slipping on an unevenly packed trail, they reduce fatigue in winter travel. They also facilitate travel, since a person can go faster on snowshoes than by plodding through deep snow unaided. Finally these aids are necessary in breaking trail for dogs, and therefore increase the daily distance which these animals can cover.

Snowshoes are of two types. The first, used for hunting and trapping, generally equals the wearer's height in length and is about a foot wide. These are used when a man desires to travel cross country as rapidly as possible, the size of the webbed area preventing him from sinking too deeply into the snow. While such "big snowshoes" are known, their use was not observed among the Upper Liard Indians during the period of field work. The second type is used in breaking trail for dogs and vehicles and for hunting or trapping. Their length is also apportioned to the height of the wearer, a five foot man generally wearing snowshoes about three feet long and ten inches wide. Left and right foot snowshoes are recognized, the greatest curve of the wood being on the outside of the foot. Snowshoe frames are prepared by men and the panels are almost always filled by women. The details of lacing and of the foot lashing follow the style which has been traditional since aboriginal times and will not be described here.

In contrast to what has been said for other areas,[19] the Kaska Indian tends to walk on

[19] A detailed description of putting on, walking, and turning with snowshoes will be found in Osgood, *Ingalik Material Culture* (1940), 349-350. The picture he gives there is in complete agreement with what was noted among the Kaska. Personal use of snowshoes revealed that it takes no more than two or three hours to become used to them in walking. Learning to turn takes longer time, and a number of days are required before their presence on the feet ceases to be consciously noted. So far as their indispensability is concerned, there can be no question.

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481 snowshoes much as he does without them, the feet being lifted sufficiently for each shoe to clear the frame of the other. In climbing a hill, the toes are bent sharply so that they will extend down through an unfilled space at the front of the center panel. In this way the toes secure an anchorage in the packed snow. In breaking trail, the hardest kind of winter travel, a person can generally cover about fifteen miles a day with such footgear. This distance can be doubled if trail is already broken.

296 Following use, snowshoes are usually brought into the house and carefully dried, after which they may be stored outdoors. Repairs on snowshoes are frequently necessary. A split frame is secured by willow splints, which are cut in a few minutes and lashed to the fractured wood with babiche.

501 *Water transportation.* In summer the Kaska use rafts and plank boats. Only Old Kean owns a plywood canoe of commercial origin, which he sometimes uses for fishing. Rafts are built by men where trails cross wide rivers and are also used by hunters who wish to float downstream to camp. They are about seven feet long and from three to five feet wide, being constructed from red spruce poles some four or five inches in diameter. Two crosspieces, consisting of spruce saplings about two inches in diameter, are used to hold the logs together. The poles are generally aligned in water and the crosspieces attached with nails. In the fall, when rivers run cold, rafts are built on skids near the shore and pushed into the water when completed. When the vessel has reached its destination, it may be left on the shore for use by other travelers or it may be taken apart and the poles allowed to dry for fuel. In spring, larger rafts are sometimes built in order to float a family downriver to the trading post with dogs, fur, and household equipment.

502 Rafts are managed with the aid of poles, which serve as sweeps and also function when
501 the craft must be pushed away from drift piles. Accidents with rafts are not infrequent, the use of these vessels being regarded as particularly dangerous in spring and fall, when rivers run with ice. In the spring of 1944, Stella Wiley lost her seven year old son when a raft on which two adults and three children were traveling hit a drift pile and capsized. Her winter's catch of fur was also destroyed.

Plank boats are owned by many families and are either built by Indians from mill sawed lumber or are purchased from white men. They average about eighteen feet in length and are about three feet wide. For long distances, propulsion is always by means of a gasoline driven outboard motor. To cross a river, however, boats are poled or rowed. Oars are of native manufacture, being large and crudely cut from a piece of hewed lumber, and characterized by a narrow blade, which is roughly ridged, and a thick shaft about five feet long. Oars are used with steel oarlocks.

To cross a river with a strong current, the boat is dragged as far upstream as possible and is then pointed upstream from the shore. As the boat moves toward the center of the river and the current is felt to swing the prow around, the rower on the lower end rows hard while the person on the upper end pulls more easily. To curtail further the force of the current, weight is generally placed in the back of the craft. Men and women as well as adolescent children row and pole boats.

A boat lacking motor power may be pushed by another vessel which is equipped with an engine. Pushing is regarded as more efficient than lashing one boat alongside another,

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although this is also done. When a boat is to be pushed, manilla line or a pair of spruce saplings are used to fasten the vessels together. If poles are used, one end of each pole is bent to fit into the gunwales of each boat where the ends are lashed. This device is said to prevent the boats from breaking if they drop down a shelf of swift water. If two boats are used in conjunction, dogs generally ride in the forward craft and passengers with goods behind.

Once, in rainy weather, Louis Mam erected a mosquito tent in his boat. The tent was placed over a pair of bent spruce saplings anchored in the gunwales and forming an arc. The front and rear ties of the shelter were attached to the gunwales. Under this shelter rode Louis' wife, infant son, and Irene Wiley with her baby. Louis and his fourteen year old daughter, Eleanor, alternated running the outboard. The ethnographer met the party as he and Nitla were fishing downriver in a plywood canoe. Louis signalled to Nitla and the two vessels were lashed together side by side with only a slight reduction of speed on Louis' part. The journey was then resumed with all the passengers in the larger vessel.

In fall, boats are removed from water and stored high on the shore in order to prevent the spring break-up from smashing them.

Routine of travel. In contrast to the leisurely life of the Indians in camp, considerably more determination marks travel behavior once a journey has been undertaken. An effort is made to begin long journeys by getting a start early in the day, in winter sometimes an hour or two before sunrise. The demolition of the camp and the packing of the household equipment is undertaken by women while men transport the goods to boat or toboggan. When the tent has been taken down, the poles which supported the structure are left standing. This, however, is scarcely for the convenience of the next comer as only rarely will one family camp in another's campsite. Farewells, beyond a casual good-bye, are rarely taken, even when a family expects to be gone for a long period.

On walking trips, rest stops are frequently initiated by the leader of the party, but these stops are of only brief duration, particularly in winter. Smoking is a common feature of such rests. People try to cover at least half the distance of a day's journey before pausing for lunch. Lunch stops are marked by a fire and the preparation of tea; they seldom last more than forty-five minutes.

In the course of winter travel, fire is always made as soon as any member of a party complains of serious chilling. If gloved hands perspire in the course of a journey, they are exposed to the cold until chilled and then regloved; this prevents the mittens from becoming damp with perspiration and freezing. Should the fingers become cold in walking they are held lightly clenched within the mittens and the arms swung. Against the dampness absorbed from falling snow, there is no protection while traveling. When camp is reached, however, clothes are thoroughly dried or changed for fresh garments. The blanched faces of some people returning to the trading post in spring indicate that individuals are often careless or unaware of the danger of frostbite. No chances are taken with wet moccasins, however, and footwear is promptly dried or changed should it become wet.

Camp is generally made shortly before dark. If women accompany the party, they now take over the task of cutting poles and laying brush while men transport the necessary things from the craft or vehicle and perhaps start a fire. Unneeded supplies are left in the

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drawn straight under her, the buttocks resting on her ankles and calves, her knees close together. In other words, she sits while kneeling. Often a woman kneels as she works, her buttocks only slightly resting on the calves of her legs, the knees close together. Young girls, especially if they wear slacks, often assume less conventional positions. In walking, both sexes maintain a relaxed, erect posture and do not slouch. They retain this erectness into old age, three men from fifty to seventy being observed who showed no slouch. People are predominantly right-handed and regard left-handedness as amusing. The common handshake lacks vigor, consisting of a limp clasping of hands.

Psychological Processes

Important organs for sensory perception include the nose, tongue, eyes, and ears. The length of the nose is believed to be correlated with an individual's olfactory acuity—the longer the organ, the more far-reaching the sense of smell. A fantastically long nose, the informant said laughingly, would enable a man to smell a moose while with only a short nasal passage a person is able to detect odors only a brief distance away. Taste is an ability of the tongue, related to the fact that this organ is covered by an extremely thin membrane. Taste is regarded as a guide to the edibility of food. Since the function of sight is transmitted by heredity, having many offspring will result in the diminution of this power in children, while the parents will also develop weak eyes. Such diminution of sensory power through reproduction is not a feature of other perceptual processes. Blindness may also appear as the result of an exclusive meat diet.

Emotions. The heart, operating in conjunction with the blood, is the center of emotion, particularly of such feelings as love and hate. The expression of these emotions, however, is mediated by the brain or thought—a noteworthy instance of Kaska thinking being quite in agreement with the latest psychological theories of emotion as a function of the viscera and the cerebral cortex. If a person's heart is "good," hate and violence are impossible for him, even in the face of malice or aggression. Apart from violent emotions like rage, fear, and, for women, pain and excitement, language is rarely used as an adjunct of affective expression.

Curiosity is strongly developed toward unusual features in the immediate environment. The people are intensely interested in any novelty introduced into the community; the ethnographer's glasses, pens, the army trucks, the flush toilet at the Watson Lake mission, purchases of neighbors—all were handled or examined with unrestrained curiosity. Sometimes curiosity prompts even nasal and oral reactions. One day Irene Wiley picked up a handful of fresh sawdust and smelled it. Following her, Anna Lang picked up a pinch and tasted it with the tip of her tongue. At Irene's suggestion, Anna also smelled it.

Fear in the face of a recognized danger is readily expressed by adults and children. Women are particularly prone to show fear, shying from strange dogs, horses, and automobiles and also expressing great dread of wolves. Men are not immune to this emotion. While Nitla and his brother, John, were helping the ethnographer erect a tent, they encountered some hornets from which they fled to a safe distance, at the same time showing manifest fear. In men excessive fear of wolves or fear of the bush is reluctantly expressed and when shown is combatted with ridicule. It is believed that intense chronic fear, or anxiety, may result in death. Old Man told a story of a white man who was very frightened of a

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464 Any strangers coming from Telegraph Creek knew me as a good river man and they'd hire me to take them down to Lower Post.

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437 A few years later I went back to Fort Liard to sell some skins. Before I went I bought a little outfit. Oscar helped me. He gave me good advice. "Don't trade for credit," he said, "They cheat you every time. If the storeman doesn't use the scale make him use it. Tell him we're going to report him if he doesn't use it." At that time the storeman in Fort Liard never used money. He just wrote and said: "You've got so much." Old Anderson warned me: "If he does that, you can ask for cash." I took about twenty skins to Fort Liard. Old Kean came too. He had about thirty beaver. I sold my fur and the storeman started to write it down. "You've got one hundred dollars in skins," he said. "What do you mean?" I asked. "You'd better give me cash." "This is just as good as cash," the storeman replied. "We want our money," I told him. When he went to the till he said. "I have only two hundred dollars here." I told him: "You're not going to use that for yourself, that's for the Indians." The Fort Liard Indians looked at us. He gave us all that money but said: "You'll spoil the Fort Liard Indians." "Should be all over the country like that," I told him.

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797 In Telegraph Creek I had met Pallgrave, the Protestant churchman, who baptized me. When I got to Fort Liard I met Father Crouard. He warned me not to believe what the Protestant missionaries said about the Catholics and said the Protestants were wrong in what they preached. He asked me if I wanted to be baptized and I agreed. Later I told Pallgrave that Father Grouard had baptized me. He became angry and said I had already been baptized a Protestant.

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481 One time I ran eighty miles across the portage from Telegraph Creek to Dease Lake. I started at seven o'clock in the morning and got there about half-past seven at night. only stopped for a little lunch. Gosh, when I got there, how my feet swelled up!

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836 Four years after I started to work on the river, in 1914, I married Nelly. Her mother was a Nelson Indian and part Cree. Her father used to be in this country but went to Fort Nelson to work on a boat. Her parents had moved back to Lower Post about two or three years before. We were engaged for two years and when I wasn't in Telegraph Creek or working on the river I slept with her. In the winter I trapped with Nelly's father thirty miles down the Liard, near the Muddy River. My brother said: "You stay here too long just playing. You better marry her." Then we stayed together in front of everybody. She was a good wife and a good worker. In 1915 we had our first kid, a boy.

159 When I was first married and had only one child, I was like all young fellows. I didn't try to rustle but lay around most of the time. I hunted all right but gave all the meat away. My brother warned: "You're going to wake up yet." My wife then gave birth to a girl. I asked my brother for a hundred dollars to buy an outfit. He said: "You won't get it." He let me have fifty dollars to buy some stuff. We didn't carry much grub, a hundred pounds of flour was enough for me. I bought a case of milk and other stuff. That kid liked to eat all the time. My brother said: "You'd better rush." One time I made seventy lynx. That was during the first war and prices were way down. I got about four dollars for a lynx and two dollars for a good black marten. Nelly gave birth to three children. We were trapping near Tealin Lake when she died of flu in 1919.

My mother-in-law took care of the children and sometimes I lived there too. I used to

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The flesh of the otter, marten, mink, fisher, wolverine, wolf, dog, bush rat, and mouse was not eaten. Only in cases of direct necessity did people eat flesh of these animals, and the last resource was the dog. Of birds, grouse of all kinds, ducks of all kinds, geese, swans and a few other large birds were eaten.

Fresh water fish of all kinds such as salmon, trout, grayling, white fish, pike etc., were eaten.

No reptiles and insects of any kind were eaten. Any person who ate anything unusual or different from the food eaten by all was laughed at and spoken about. /Ed: this section was not completed/.

TRAVEL, TRANSPORTATION AND TRADE

BOATS

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Travel was nearly all on foot and this still continues to be the principal method of locomotion. It seems that formerly water travel was not very important to the Tahltan. According to tradition there were no canoes or at least no good canoes long ago. Bark canoes were used in a few places where crossings were made, also on some parts of sluggish streams, and on some lakes. These canoes were made for temporary use only and were seldom used excepting for short periods. They were never used more than a single season and usually the parties who made them threw them away when through with them just as people do rafts. They were roughly made of bark of large trees (varieties uncertain) peeled in the summer and sewed and fastened with wattup, spruce roots and light withes. They were so scarce and have been out of use so long that very little is now remembered about them. It is said they were of about the same shape as the skin canoes now used by the Kaska, but were of cruder make than the bark and skin canoes made by tribes to the east and north. Very few large trees having suitable bark for canoe covering are to be found in the Tahltan country excepting within the coast or Cascade Range. Some informants claim that long ago even bark canoes were not made and rafts alone were used. These were of poles lashed together with withes. It seems at least that in ancient days rafts were much more used than bark canoes and in some parts of the Tahltan country they were the only means employed for crossing of rivers and

lakes and for hunting and fishing on their waters. Rafts were also temporary and thrown away after using. After trade sprang up with the Tlingit, dugout canoes of the types used by the Tlingit were bought occasionally by the Tahltan and used on the Stikine River for crossing and moving up and down the river. Nowadays boats made by themselves or by White residents are used almost altogether. Rafts are still used for crossing streams back in the mountains. Good dugout canoes were taken great care of. They were kept in shady places and protected from the weather. Canoe houses were made for some of them, in good positions above high water mark. The earth was excavated and banked up at the sides and the excavation roofed with poles and sheets of bark. (See photo.) Paddles, poles, tow-ropes and in later times sails used on dugout canoes were all of the same kinds as used by the Tlingit.

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Snowshoes

Snowshoes were in universal use in the winter time for traveling and hunting and are still as much used as ever. Although snowshoes have been used by the tribe for a very long time back still tradition is emphatic in saying that at one time they were unknown. (See similar tradition among the Carrier, see Morice p. 151.) Most informants agree that the first snowshoes were flat and had a round head. (It seems the snowshoes first used by the Carrier were of this type, see Morice p. 152 and figure 141.) Later round-headed snowshoes were bent up a good deal /i.e., turned up at the toe./ Then the kind having the head shaped like a duck's breast-bone came into vogue, and in late times these were replaced by the present shovel-nosed type. At first sinew was used for filling,/webbing,/and later babiche. I collected the following story regarding the origin of the snowshoe.

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"Very long ago, when the World was young, people were nearer to animals than they are now, for they were ignorant of many of the arts and had few tools and implements. At this time they had no knowledge of snowshoes and when the snow was very deep they could not travel far from their camps. People wanted to have snowshoes and tried the making of many different kinds and shapes. Some had round frames and some were long. The tails and noses were of various types. All the shoes were rude and none of them

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Frances Lake
Upper Liard

formants, who were young men with records of considerable time spent in the Liard Valley. It is likely that the patterns already presented also largely obtained in the Frances Lake area."

TRAVEL AND TRANSPORTATION

Upper Liard Kaska. Foodgetting among the Indians of the taiga depended thoroughly upon mobility. Although a little travel occurred for other purposes, two main patterns of mobility may be distinguished. First, groups of people moved with their belongings to various parts of the tribal territory in search of new food resources to exploit. Such travel took place, for example, in the fall when the population moved to the mountains and again in early winter when they journeyed down to fish lakes. Second, there took place a great deal of "short term" travel, required of men pursuing game or of women visiting fish nets and berry patches. The Indians remained mobile in every season but the techniques of travel differed to a considerable extent between winter and summer. With snow on the ground and bodies of water covered with ice the toboggan and snowshoe provided the basic travel aids while in the season of open water travelers relied on the canoe, paddle, and raft.

Animal skins as well as wood were utilized for toboggans. Beaver skins prepared with the hair served well for traction, the smoothness of the pelt aiding their easy passage over the snow. Three such skins sewn together constituted a good sized vehicle. A number of skins from the hind legs of moose or caribou might also be sewn together with sinew to make a toboggan six feet long and two feet wide. To hold goods securely the rear portions of skin toboggans were stitched "like a baby bag." Prepared by a woman, a skin vehicle would last a winter or even two if stored in a dry place when the snow began to melt. A man manufactured undecorated wooden toboggans, tamarack being the preferred material. After splitting the green wood with a wedge he planed the boards with his stone knife. Wood from the exterior section of the tree bent most readily, the bending process being accomplished by moistening the lumber with warm water and then forcing the board back "against a pole."[10] The running boards were sewn to cross

[11] Similar patterns are reported for the Pelly River people by Field, who says, for example, that the Pelly River people moved into "a good game country about the end of August when all game is fat, to put up a cache of dry meat for the winter months." In fall women busied themselves drying groundhog and gopher. The Indians of the Ross and Pelly valleys subsisted primarily on meat and fish. Men "used bows and arrows to hunt with, spears, snares, deadfalls also. They would make long fences when the caribou and sheep came below timberline, sometimes packing poles to make their fences up with on top of the mountains. They would leave spaces big enough for a caribou or sheep to go through in their fences and get snared in them. Whenever a herd was sighted they would try to surround them and drive them through their fences." Cordage for snares came from twisted "sinew or caribou skin raw" and the line was anchored to a movable pole toggle. "Beaver the Indian kills every way, with nets in winter, spears and shoots them . . . and kills them with a club." The gaff stick also served in hunting beaver. (Field, *Unpublished manuscript* [1913].) An Upper Liard informant (0) reported with some distaste that the Ross River Indians deliberately cultivated mold in meat that was later cooked. Such meat proved too strong for the taste of the Liard River people.

[10] The method no doubt resembled that executed by a Frances Lake Indian in 1945. See Honigmann, *Culture and Ethos of Kaska Society* (1949), 60, 73-74; also Pl. 6, a and b.

6: Honigmann E-5 (1943-1945)1954 ND12 Nahane ND12
Upper Liard

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pieces with babiche line countersunk in order to avoid wear by friction. At the end of the winter a careful man hung his toboggan in a tree on its upturned nose, the heavy brush protecting the vehicle from rain.

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In loading a toboggan the traveler placed the heaviest load in front, this practice facilitating handling of the vehicle. Women drew toboggans when moving camp but men returning from a hunt drew meat on skin or wooden vehicles. With the introduction of dogs large and strong enough for traction, the tandem hitch came into use for traveling through bush. Toboggans were not used to transport people, with the exception of small children.

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The powdery snow of the Cassiar would have hindered foot travel during a large part of the year had means not been available for adapting to this boreal forest condition. To break a trail on which the toboggan could move easily without sinking too deeply, as well as for hunting in soft snow, people employed snowshoes. An origin tale explains the introduction of these aids to travel.

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In the beginning people couldn't walk as they had no snowshoes. An old man suggested taking advantage of the upraised end of a spruce branch. Wearing such brush on his feet he went up into the mountains to kill porcupine. The man's name was Klgadats, "snowshoe filling father." The people tried the idea but couldn't go far. The old man then hit upon the improved device of a snowshoe frame. He fashioned one with a stone knife and used a beaver tooth chisel to drill large holes in it. A porcupine tooth set in that animal's jawbone served to drill the holes for the fine filling. These people showed everybody how to make snowshoes and the old man became rich making snowshoes for others (X).*

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Aboriginally the Upper Liard Indians manufactured temporary, round and pointed snowshoes. A man caught in an early winter snowfall and lacking his regular snowshoes would prepare a camp and make temporary devices. Bending and lashing a branch of willow or some other easily pliable wood into a rough circle he further provided two crosspieces consisting of short lengths of willow split at either end. The split edges were pulled fanwise in the shape of a crude Y and each bar of the Y was then lashed to the willow frame. Of the three panels thus formed only the center one was filled with whatever odds and ends of skin line the maker happened to have in his possession. The fronts of such snowshoes were not usually upturned. The wearer discarded temporary snowshoes once he had reached the main camp. The use of two converging willow poles in constructing temporary snowshoes was not known.

The round or Louchoux type snowshoe is said to have been in early use along the upper Liard River. The native term, however, gives no clue to relative chronology being translated as "snowshoe with pieces overlapping in front." Spruce provided the preferred material for the frames. Although birch was sometimes substituted for spruce, the former wood is said to have picked up and carried too much snow in spring, thereby increasing the weight of the shoe. One informant (O) was much impressed with the use of maple for frames. He had secured a pair of maple snowshoes in Juneau made by a Tlingit Indian and claimed the wood to be perfect for shedding snow. This tree, how-

* We are inclined to see the last part of the story as a late addition to the tale. A young Tahltan woman reported that her people ascribe the origin of the snowshoe to Wolf.

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over, does not grow in the Canine.* Aboriginally wood for snowshoe frames was bent after first being carefully chewed with the teeth. The forward overlap of the two parts of the frame extended for about five inches on a trail snowshoe and somewhat more on the shorter hunting variety. Two or three cross pieces resulted in three or four panels. A rounded snowshoe, it is claimed, did not sink into the snow as much in front as the pointed variety nor would it pick up as much snow.* While known aboriginally, the pointed snowshoe became more common following European contact.

A craftsman "tailored" the size of snowshoes to their intended function. If designed for breaking trail in front of a toboggan or for following an already broken trail the average size person could get along with snowshoes about three and a half feet long. Hunting snowshoes, designed for remaining near the surface of deep, loosely packed snow, almost equalled the height of the prospective wearer, the width being somewhat adjusted to the user's relative weight. Two varieties of babiche line served for filling, first, a heavy cordage that was woven into the center panel supporting the direct weight of the wearer, and second, a fine line for the front and rear panels. Both men and women knew how to fill snowshoes but the process generally occupied the latter. In applying the fine filling the artisan needed a bone snowshoe needle. In one type of needle the blunt end of the instrument was made concave in order to push through the line. The other end formed a slight hook, useful for pulling the line upward through filling already laid down. Another type of needle, made of wood or bone, contained a center eye in which to anchor the filling cord. Prior to lacing, loops of cordage had to be provided around the inside of the frame, to which the webbing of the front and rear panels could be anchored. Holes for these loops are said sometimes to have been drilled with a piece of hardwood heated to a glow and then pressed against the appropriate point of the frame. Several reheatings of the "awl" were necessary to complete the task. Beaver- and porcupine-tooth awls served as much more efficient drills.

The following patterns of snowshoe lacing are derived from an analysis of contemporary snowshoes. No radical differences from aboriginal practice could be discovered. When starting to fill a snowshoe the worker usually turned to the front panel, the line beginning at the right hand side (Fig. 4, COVER LEFT, facing front end of snowshoe). One end of the line passed through the first framework loop (17) where it was tied with a double overhand knot. The other end was carried back to the crosspiece. Bending over the top of the strut (18) it came out from below and traveled up to the toe where it bent over the babiche which here held the frame together (9). (Aboriginally the Leatherock type shoes must have been provided with loops going completely around the front of the panel.) Coming out from below, the line twisted against its own part and

* Rocky Mountain maple "is especially used in making snowshoes and bows" among the Salishan Thompson Indians. Steedman, *Ethnography of the Thompson Indians of British Columbia* (1930), 499, 500; Ray, *Culture Element Distributions: XXII, Plateau* (1942), 158.

* At Fort Nelson an Indian expressed an opposite preference when he said that rounded front snowshoes were of little use "in this country, but in the North, where the snow is packed hard, they can be used." (Honigmann, *Ethnography and Acculturation of the Fort Nelson Slave* [1946], 43.) Needless to say there is no difference in the quality of the snow between the Fort Nelson and Canine areas. The opinions represent diverse attitudes toward a bygone culture pattern.

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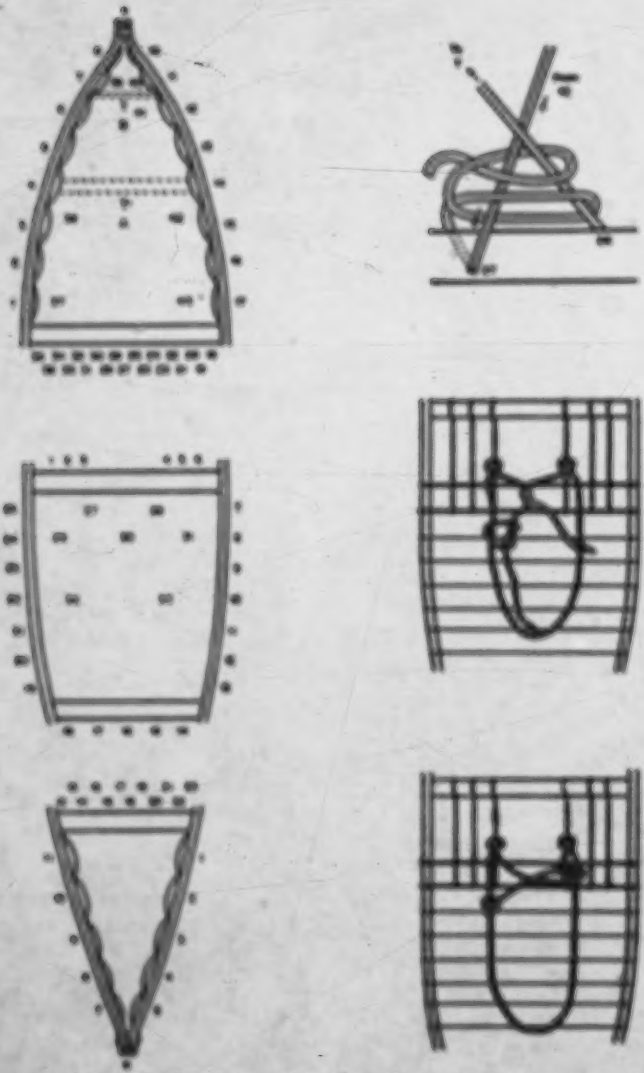

FIG. 4. Details of Snowshoe Lacing and Types of Foot Harness.

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proceeded back to the forward strut at the extreme left of the shoe. Bending over the top of the strut (36) it came up from below, twisted around itself, and went to the first framework loop on the left side of the shoe (1) through which it passed from above. When pulled through this loop, the line bent against its own part enroute to the next station on the opposite side of the panel. Here, from above, it entered framework loop 16, bent against its own part, and traveled to the next station on the crosspiece (19). The same pattern was now repeated. In going forward, the line wove under the strands previously laid (1–17, etc.). All strands passed under the braces (A and B). In the snowshoes examined the foremost brace (B) consisted of several thicknesses of twisted babiche. The lacing may be followed to its conclusion by referring to the following pattern and to Figure 4.

Pattern of lacing front panel of snowshoes (Fig. 4, UPPER LEFT). 17, 18, 9, 36 (twist around 9-36), 1, 17, 19, 9, 35 (twist around 9-35), 2, 16, 21, 8, 10, 23 (twist around 10-23), 3, 16, 22, 7, 11, 32 (twist around 11-32), 3, 16, 23, 7, 11, 31 (twist around 11-31), 4, 15, 24, 6, 11, 30 (twist around 11-30), 4, 15, 25, 6. The line bent twice around the 6-10 line from above (29), twisted around its own part four times, bent twice around the 2-17 strand from above (37), twisted around its own part five times, and then proceeded to stations 5 and 14. When this crossing was completed the line traveled back to the 1-17 strand, bent around this strand from above (38), twisted around its own part six times, and then passed on to the 8-30 strand. It bent around this strand from above (40), twisted around its own part four times, and proceeded to the next station. The pattern then was: 30, 5, 14, 25, 7, 12, 29, 5, 14, 26, 7. The line next traveled to the 4-13 strand, bent around this strand from above (42), twisted around its own part four times and proceeded to stations 6 and 13. After making this crossing the line traveled to the 4-15 strand, bent around this strand from above (42), twisted around itself four times enroute to the babiche brace (B). From above the line now bent across one of the lines constituting this brace (41), twisted around its own part, and proceeded to stations 28, 6, 12, 27. The concluding knot included its own part and the 26-7 strand (see Fig. 4, UPPER RIGHT).

Lacing the rear panel departed little from the general pattern governing the front. The lacer held the shoe with the heel forward and began on her right hand side (Figure 4, LOWER LEFT). The line was tied to the rear portion of framework loop number 11 with a double overhand knot, drawn back to 12, bent across the top of the crosspiece and, coming out below, proceeded to the next station, 6. Here the line bent from above around the babiche holding the heel of the snowshoe together. Coming out below it twisted around itself twice from left to right and proceeded to the crosspiece (23). It bent around this strut from above. On emerging the line bent against itself and proceeded to framework loop 1, which it entered from above, bent against itself on emerging, and crossed to the opposite framework loop (11). In going forward (toward the heel of the shoe) the line passed under the strands previously laid while in returning to the crosspiece the line wove under the strands already put in place. The lacing may be followed to its conclusion in the following pattern:

Pattern for lacing rear panel of snowshoes (Fig. 4, LOWER LEFT): 11, 12, 6 (double twist around 12-6), 23, 1, 11, 13, 5, 7, 23, 2, 11, 14, 5, 7, 23, 2, 10, 15, 4, 8, 20, 3, 10, 16, 4, 8, 19, 3, 10, 17, 3, 9, 18, 3, 9. The line bent twice around the strut at 18, the second time being drawn under its own immediately preceding part.

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The lacing of the center panel (Figure 4, CENTER LEFT) is more complicated than that of the front or rear. The worker began by tying a single overhand knot to the left hand frame just below the forward crosspiece (Fig. 4, CENTER LEFT), station 25, facing front end of the snowshoe.[8] The line then traveled three times across and back between the left and right sides of the frame (25, 7), in each case bending around the outside of the frame. This gave six thicknesses of babiche, three at the top and three at the bottom of the frame. Coming up and bending across the top of the left hand frame after the final crossing, the line was drawn back to its next station (24) and made four crossings between the left and right sides of the frame (24, 8), giving four thicknesses of babiche. This time, when the line came up to bend over the top of the left side of the frame, it bent around the four lines just laid and proceeded forward to bend over the top of the forward crosspiece (1). Coming out from below, the line twisted twice from left to right around its own part between the crosspiece and the 25-7 strand, and three times in the same direction between the 25-7 and 24-8 strands before proceeding to the rear crosspiece. It bent over the top of the strut (16), came up from below, and twisted against itself. Going forward the line went toward the right-hand side of the shoe to the forward crosspiece, across which it bent from above (6); came out from below; twisted around itself twice from left to right between the forward strut and the 25-7 strand; and twice more in the same direction between the 25-7 and 24-8 strands. Coming out from the 24-8 strand, the line bent against itself enroute to the next station on the right side of the frame. Bending across the top of the frame (9) the line came up, bent against itself, and proceeded to the opposite frame (23), bending across this from below. On emerging the line bent against itself and proceeded to station 2, above the lines previously laid. The rest of the lacing may be followed from the following pattern. Going forward the line passed over strands previously laid; going toward the rear crosspiece it wove under the already laced horizontal strands.

Pattern for lacing center panel of snowshoe (Fig. 4, CENTER LEFT): 25, 7, 26, 8, 1 (double twist between forward crosspiece and 25-7 strand; triple twist between 25-7 and 24-8 strands), 16, 6 (double twist, repeated as above), 9, 23, 2 (triple twist between forward crosspiece and 25-7 strand, double twist between 25-7 and 24-8 strands), 15, 31[9] (single twist between 24-8 and 23-9 strands, repeated between 23-9 and 22-10 strands), 10, 22, 29 (single twist, repeated as above), 11, 21, 3 (triple twist between forward crosspiece and the 25-7 strand, double twist between 25-7 and 24-8 strands), 14, 33[9] (single twist between 22-10 and 21-11 strands, repeated between 21-11 and 20-12 strands), 12, 20, 32 (single twist, repeated as above), 18, 4 (double twist between 25-7 and 24-8 strands), 13, 9, 28 (double twist between 25-7 and 24-8 strands). The line bent around the 24-8 strand from below (30), twisted around the 18-4 line once between the 25-7 strand and the forward crosspiece, passed under the crosspiece and came up to pass from right to left across the six forward running lines of the front panel (i.e., those proceeding from stations 25, 26, 27, 28, 29, 30 in Figure 4, UPPER LEFT). The line now passed under the

[8] In the case of one shoe made by the same worker the lacing at this point began by the line being pulled through a hole cut in the end of its own part.

[9] This station, as well as 26, represents points where the line bent across only the top two lines of the four thicknesses of babiche which had been laid between stations 24 and 8.

[9] This station, as well as 29, represents bends around the 22-10 strand.

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481 384 forward crosspiece, came up from below and bent across the 25-7 strand from above (27), bent across the forward crosspiece from above (3), then twisted three times around the 3-14 strand between the forward crosspiece and the 25-7 strand, and twisted around the 25-7 strand enroute to the left hand frame, where the line knotted at station 25 with a single overhand knot that included one part of the 25-7 strand.

[177] Two types of harness, both made from smoked-skin line, secured the snowshoe to the moccasin-covered foot. One of these is said to have been introduced into the area from Fort Liard and is currently referred to as the "Nelson type" (Fig. 4, CENTER RIGHT). The other was in use among the Liard River and "Tlingit" (probably Taku) people (Fig. 4, LOWER RIGHT).

481 322 To avoid slipping on steep inclines four bone pins were sometimes inserted into holes provided at the bottom of each snowshoe. The pins projected about an inch from the wood. The snowshoe staff further aided walking in hilly country. It consisted of a stick about four feet long with a hoop that was laced with babiche line. The hoop was located a short distance from the lower end of the staff and consisted of a short length of willow bent and lashed in the form of a circle. The filling served to keep the hoop affixed to the staff. A man prepared wood for this implement while women customarily added the filling. No distinctive staff for the snowshoe staff could be learned, informants designating it merely as "walking stick." Morice, however, has translated the Carrier name for this implement as referring to the "circular attachment which prevents it [the staff] from sinking too much in the snow."[23] Men wore snow glasses when traveling across snow made bright by the spring sun. These implements consisted of strips of tanned skin or birch bark provided with eye slits. The area around the slits was blackened with charcoal to further reduce glare.

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481 484 Land travel in summer or winter generally involved men walking in advance of the women, who remained in charge of children and household goods. This pattern left men free to intercept or follow game, reduced disturbance that might drive away game, and also enabled men to prepare sufficient wood for a comfortable camp before the women arrived. Sometimes women and children did not reach a camp until midnight.

[487] In autumn, enroute to the ground-hog trapping grounds in the mountains, a number of families moved together, the men scouting for moose and the women walking in old

[489] and well-defined trails. People crossed streams on rafts as well as on log bridges constructed by felling either one, two, or three thin trees or by shifting an already fallen tree into position to serve as a span. In traveling to a game kill, as well as in other types

487 of cross country movement, Indians sometimes indicated their route by blazes. One type of blaze consisted of a willow or other branch broken in the specified direction. In an "open place" the route might be indicated by hanging moss in trees, while up in the barren mountain tundra, which composed a sizable part of the Kaska territory, successive rock piles served as guides. River valleys were commonly referred to in giving

[23] Morice, *Carrier Language* (1932), 62. Lantis describes a similar "snowshoe stick" in use among the Nunivak Eskimo. (Lantis, *Social Culture of the Nunivak Eskimo* [1946], 167.) While informants among the Attawapiskat Cree Indians of James Bay denied the use of snowshoe pegs or the snowshoe staff the counterpart of the latter may have existed in "crutches" with a webbed lower end. These allowed lame persons to support themselves on snow. Honigmann, *Attawapiskat field notes* (1947-48).

3/1 [Erratum. Probably meant "name"—Analyst]

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501 396 entire summer. A cruder type of spruce-bark vessel, containing a single-pole gunwale and fewer ribs, served to cross a river and might be manufactured in an hour or two. After serving its purpose it was discarded. Spruce craft remained undecorated. When employed for hunting beaver, the hulls might be blackened with charcoal in order to make the vessels resemble sticks of driftwood. The occupants of a bark canoe sat on pilet of moss about ten inches thick, legs being tucked under the body and feet flaring out in a slight angle. When he wearied of this position a man stretched his legs out in front of him but he never sat with crossed legs. Upon sighting game the Indian pointed the craft in the direction of the animal before letting his arrow fly. Shooting from the boat at an acute angle to the hull threatened capsizing. Spruce canoes constituted fragile craft. The informant recalled one that broke under the weight of a moose. While any man might try his hand at making such a vessel, a certain amount of skill was prerequisite and occasionally able men made canoes in exchange for skins and [422] arrows. Ownership of the boat rested in the man but women freely used the smaller variety for fishing.

As we have pointed out, the scarcity of white birch in the region of the upper Liard River prohibited the manufacture of birch-bark canoes. In 1842 Campbell had to send from Fort Halkett to Fort Liard for this material in order to construct canoes for exploring the Pelly River.[34] Decked canoes and sails likewise did not exist and only rarely did travelers fasten their canoes in pairs. Sometimes this practice occurred in smooth water, when two families moved camp together. In dangerous water the boats separated.

Men constructed paddles from spruce wood, the handle being shaped with a rounded knob at the upper end.[35] A hole drilled through this knob admitted the paddler's finger and gave him a firmer grip. Blades contained a center ridge from which the wood tapered to thin edges. For bailing voyagers employed a dipper carved from birch wood but minus any handle.[36] Bailers were sometimes decorated.

● 481 Indians forded rivers by swimming in cases where an exceptionally strong current prohibited the use of rafts. The swimmers clutched a floating pole as they paddled.[37] Women crossed simultaneously with men but a short distance further downstream. Everyone in the aboriginal community knew how to swim.

481 413 [171] *Dease River Kaska.* Winter land transportation in the Dease River basin depended on skin and wood toboggans as well as on snowshoes. The sled remained unknown until introduced by Euro-Canadians. The skin stripped from the leg of a caribou made a useful vehicle in which to haul meat over loose snow. Wooden toboggans utilized spruce or birch wood and lacked the sharply upturned nose characteristic of the modern-style

[34] Campbell, *Discovery and Exploration of the Pelly (Yukon) River* (1883).

[35] Crutch-handle paddles were in general use on the Northwest Coast. Drucker, *Culture Element Distributions: XXVI, Northwest Coast* (1950), 182.

[36] Bailers consisting of a wooden scoop are widespread on the Pacific Coast while bark bailers are more characteristic of the Plateau. Drucker, *Culture Element Distributions: XXVI, Northwest Coast* (1950), 182; Ray, *Culture Element Distributions: XXII, Plateau* (1942), 158.

[37] Judging from Hornell's data, swimming floats have rarely been reported for North America. Hornell, *Water Transport* (1946), 3 ff.

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vehicle. Women as well as men drew the toboggans, a harness for this purpose consisting of one moose-hide line passing around the outside of the arms and around the chest while another cord passed over the top of the head.

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Snowshoe types included the round or Loucheux style (said to have been preferable because of its lighter weight) as well as the pointed variety. Function determined the length of these appliances, long shoes being best adapted for a hunter's swift travel in deep snow. Small shoes served well to break trail for a toboggan. In case of emergency a man made temporary snowshoes by bending and lashing a willow pole, which he then filled with heavy babiche line. Children usually employed such crude snowshoes throughout the winter. The customary division of labor appeared, a man constructing the framework while a woman applied the filling. Bone snowshoe needles contained a concave depression at one end that served to push the line between closely laid strands of filling.

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In any season the order to travel required men to walk ahead of women, a pattern that allowed them to break trail for the women and children. Blazes consisted of willow and other branches broken in the direction taken. Sometimes men hung moss in the branches of a tree, laid down stones to indicate a course, or cut the trunks of trees with a caribou-horn adz. A single tree felled by fire provided a convenient bridge. Occasionally more complex spans containing a number of poles provided safer means for crossing a stream. The tump line facilitated packing and pack sticks remained unknown. Baby packs consisted of tanned skin padded with moss. In this container the child faced away from the mother. When old enough to leave the moss bag a youngster rode facing the mother on the latter's back supported by a baby strap that was passed around the outside of the arms and tied in front of the woman's breast. Such belts were often decorated with porcupine-quill embroidery. Bark baby carriers were not made.

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For communication between traveling groups, the Indians sometimes made use of smoke signals, a single smoke calling attention to a game kill. Also runners might be sent to invite people to the scene of a kill, young men being able to cover 20 miles by running in a single day. Picture writing or drum language were both lacking.

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For water transportation the Dease River people relied on rafts, moose-skin boats (which occasionally reached a length of 20 feet), dugouts, and spruce-bark canoes. A raft contained the necessary number of poles lashed to crosspieces with tanned-skin line. Pointing the bow gave the craft greater speed. An earthen fireplace was often situated somewhat forward on a pointed raft, but people invariably spent nights on shore in the course of traveling. Two varieties of spruce-bark canoes may be distinguished, small vessels serving one or two hunters and larger boats for traveling. The bark was sewn to the framework with spruce root line. Decked canoes, sails, or canoes traveling in pairs could not be recalled for the pre-contact period. Men cut paddles from spruce wood. Rounded handles were denied for these implements, the informant claiming that the upper end of the shaft contained a crosspiece on which the canoer fastened his grip. Such crutch-like handles must have resembled the type in use on the Northwest Coast. A ridge was left on the center of the blade, the edges of which might be decorated with notches burned into the wood.

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